ASSESSMENT OF THE DISASTERS PREPAREDNESS AT OPHTHALMOLOGY CENTER MANSOURA UNIVERSITY

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Abstract:

Background: True disaster preparedness is not really measured until put to the test of a real disaster appropriate reaction to crises necessitates hospital readiness for such conditions. So, each hospital should have previously disasters preparedness for confronting the disasters. A across sectional study aimed to assess disasters preparedness at Ophthalmology Center Mansoura University through stratified random sample involved 313 of manpower at the Center. The data were collected through five tools;1) An observation checklist to assess disasters preparedness at Ophthalmology Center which include two parts; (Part I: An observation checklist to assess the physical environment of Ophthalmology Centre and (b) An observation checklist to assess the Ophthalmology Centre's policy related to disasters preparedness, 2) An observation checklist to assess Ophthalmology Center's infection control measures, 3) Self administered questionnaire to assess perceived disasters to be expected by manpower at Ophthalmology Centre, 4) Self administered questionnaire to assess manpower's knowledge, and 5) Self administered questionnaire to assess subjective performance of manpower. The results of the present study illustrated that Ophthalmology Center was unprepared as a total score of structural, nonstructural, and policy indicators regarding disasters preparedness was 49.0%, and 53.2%. totally applied infection control measures. Slightly more than half (50.5%) of manpower's aged from 30->40 years, more than two fifths (41.2%) of them had 10->20 years of experience and most (98.4%) of the manpower did not attend training program regarding disasters preparedness. The most common perceived disasters to be expected by manpower at Ophthalmology Centre were the fire. 66.7% of employees, 84.2% of securities, 95.2% of technicians, 51.9% of head and staff nurses, 97% of housekeepers, and 15.4% of physicians and pharmacists have poor level of total knowledge score about disasters preparedness. Non (100%) of employees, securities, technicians, housekeepers, physicians and pharmacists had total proper subjective performance; while the total proper subjective performance of head and staff nurses was 1.2%. The study recommended that: Firstly specified to Ophthalmology Center Mansoura University; Continuous assessment of disasters preparedness, training programs for manpower's regarding disasters preparedness, The absent out lined of non structural indicators regarding disasters preparedness including: building documents, architectural and furnishings, safety of lifeline facilities, communication and coordination, surge capacity, disasters preparedness plan, and policy should be should be put in consideration, establishing an isolation department for emergency outbreak infectious diseases. Secondly: hospitals at a large;

Keywords: Hospital Disasters, Disasters Preparedness, Hospital Disaster Preparedness (HDP), Hospital Disaster Preparedness Indicators (HDPI),

Introduction:

A disaster is an occurrence disrupting the normal conditions of existence and causing a level of suffering that exceeds the capacity of adjustment of the affected community [1]. A disaster is defined on the basis of its consequences on health and health services as a serious disruption of the functioning of society, causing widespread human, material or environmental losses, that exceeds the local capacity to respond, and calls for external assistance [2].

The types of disasters include natural disasters (i.e., hurricanes, tornadoes, earthquakes), man-made accidental disasters (i.e., industrial chemical spills), man-made intentional disasters (i.e., acts of terrorism), and technological disasters that may fall under each category (i.e., power grid failure [3].

Disasters occur every day somewhere in the world with dramatic impact on individuals, families and communities. According to [4] mentioned that 5,884 people were killed by technological disasters. the event, which resulted in the highest number of deaths. Transport accidents accounted for 74 percent of deaths from technological disasters

Egypt disasters statistics related to human and economic losses that have occurred between 1980 - 2013; number of events 23, number of people killed 1.927, average killed per year 99, number of people affected 262.864, average affected per year 8.479, economic damage 1.342.000$, and economic damage per year 43.290 [5,6] (Gaber, 2015 & United Nations Development Programme, 2014).

Preparedness defined as the set of measures that ensure the organized mobilization of personnel, funds, equipment and supplies within a safe environment for effective relief, with a deliberate stress on the word "safe" [7]. Disaster preparedness is a continuous and integrated process resulting from a wide range of activities and resources rather than from a distinct sectoral activity by itself. It requires the contributions of many different areas ranging from training and logistics, to health care to institutional development [8].

Furthermore disaster preparedness is building up of capacities before a disaster situation prevails in order to reduce impacts. Its measures include interalia, availability of food reserve, emergency reserve fund, seed reserve, health facilities, warning systems, logistical infrastructure, relief manual, and shelves of projects [9].

Disasters can cause great confusion and inefficiency in the hospitals. They can overwhelm the hospital resources, staffs, space and supplies [10]. In Egypt, there are many disasters that occur within hospitals for instance; fire, gas explosion, spread of infection, radiation accident, food poisoning and violence attacks all of them resulted from poor management and absence of disasters preparedness. Stating examples of those disasters occurred at Maamoura Psychiatric Hospital Alexandria which evacuated after flooded water level rosed to 30 centimeter above the ground. This crisis inferred to the horizontal design of hospital since 1968 [11].

Also violent events occurred at Mansoura International Hospital which related to absence of security at the hospital [12]. And the huge fire at Urology and Nephrology centre Mansoura University [13].

Preparedness assessments should include: elements of disaster planning; emergency coordination; communication; training; expansion of hospital surge capacity; personnel; availability of equipment; stockpiles of medical supplies; and expansion of laboratory capacities[14,15].

Lack of any tangible plan to fall back upon in times of disaster leads to a

situation where there are many sources of command, many leaders, and no concerted effort to solve the problem [10]. It is essential that all hospital emergency plans have the primary feature of defining the command structure in their hospital, and to extrapolate it to disaster scenario with clear cut job definitions once the disaster button is pushed. But the main aim of hospital emergency plan should be to keep this time as short as possible [16].

The need for qualified individuals ready to respond to disasters and to participate in preparedness and disaster recovery activities is well documented. However, training is often fragmented or not available. Coordinated efforts must encompass various hospital departments, including nursing, medicine, pharmacy, and administration. Each department must be equally prepared with a specific, defined role [17].

It is essential that hospitals must understand and address issues of disasters preparedness for prevention of the occurrence, minimizing casualty number, preventing further casualties, rescuing the injured, providing first and evaluating the injured, and providing definitive care and facilitating reconstruction recovery so it requires much planning, drilling, evaluating, revising and preplanning to successfully handle sudden events that injure humans, destroy property, and overwhelm responders [18] .

Nurses play a key role in preparedness activities. The creation of policy related to response and recovery requires nursing input. Policies related to use of unlicensed personnel including health care providers from outside the disaster jurisdiction or alteration of standards of care cannot be created without full involvement of nursing. Nurses provide assessments of community needs and resources related to health and medical care which contribute to the planning activities [19].

Nurses role in disaster preparedness involves: educating all hospital workers about disasters, working to reduce hazards in the workplace, contributing to the development, implementation and evaluation of hospital readiness [20].

There is much written about preparedness of hospital however there is no accepted gold standard that can be applied to all hospitals for there are different levels of hospitals, in different parts of the world and for all disasters [22,23], in this study structural and non structural indicators would be used to assessment disasters assessment at Ophthalmology Center, Mansoura University.

Aim of the Study is to

Assess the disasters preparedness at Ophthalmology Center, Mansoura University.

Research design

Cross sectional descriptive study design was used to carry out this research

Setting This study was conducted at Ophthalmology Centre Mansoura University.

Subjects and sampling

A stratified random sample was used as a sampling technique in this study. The following steps were conducted to select the study sample: Manpower of Ophthalmology Centre Mansoura University was 550 categorized as the following: Physicians 14, pharmacies 8, head nurses 28, staff nurses 114, employees 148, technicians 145, securities 33 and housekeepers 60.The required sample size was found to be 288 and to compensate for non-response, increased sample size to 313.The sample was recruited as the following: 10 physicians,3 pharmaceutics, 16 head nurses, 65 staff nurses, 84 employees, 82 technicians, 19 securities and 33 housekeepers.

Study tools

Five tools were used in this study for data collection.

First Tool: An observation checklist to assess disasters preparedness at Ophthalmology Center This tool was consisted of two parts. **Part I**: An observation checklist to assess the physical environment of Ophthalmology Centre It was including two parts structural and non structural indicators. **Part II**: An observation checklist to assess the Ophthalmology Centre's policy scoring system of disasters preparedness's assessment at Ophthalmology Center. Scoring system ranged from 0 to1 point, each present item scored 1 point and the absent items scored 0. The total scores were 131 and considered as the following: Prepared if the score was 70 % or more (91.7 from the total scores or more).Un prepared if less than 70% (less than91.7 from the total scores). **Tool II:** An observation checklist to assess Ophthalmology Center's infection control measures and cover the following items Administration of infection control, Sterilization department, Storage of supplies department, and Isolation department for infectious diseases scoring system ranged from 0 to 1 point, each present item scored 1 point and the absent item scored 0. The total scores were 79 and considered as follows: Prepared if the score was 70% or more (55.3 from the total scores or more).Unprepared if less than 70 % (less than 55.3 from the total scores). **Tool III:** Self administered questionnaire to assess perceived disasters to be expected by manpower at Ophthalmology Centre Mansoura University composed of one open ended question. **Tool IV:** Self administered questionnaire to assess manpower's knowledge It was include the following parts. **Part I**: Socio-demographic characteristic of manpower such as: Age, gender, residence and marital status. **Part II**: Professional data including: Categories, specialties, years of experience and training courses in related fields of disasters preparedness. **Part III**:

Manpower's knowledge in relation to disasters preparedness as: definition of disasters and disasters preparedness, causes, types, and examples of disasters, and steps of disasters management. Which composed of 6 multiple choices questions? **Scoring system** ranged from 0 to 19, one point for each correct answer. The knowledge levels were categorized into three categories: Poor < 50% of total scores (<9.5), Average = 50% to 75% of total sores (9.5-14.25) and Good >75% of total scores (>14.25).

Tool V: Self administered questionnaire to assess subjective performance of manpower related to disasters preparedness in cases such as fire, food poisoning, violence, terrorism and outbreak of infection. **Scoring system** ranged from 0 to 14, one point for each correct answer. The performance level was categorized into two categories: Improper 75% of total scores (10.5). Proper > 75% of total scores (>10.5).

Methods

An official letter was issued from the Faculty of Nursing, Mansoura University to the director of Ophthalmology Centre Mansoura University to permit the researcher to carry out the study.

Ethical approval on the study was obtained from the research ethics committee of the faculty of nursing, Mansoura University.

Verbal approval was obtained from manpower at ophthalmology center to participate in the study.

Data generated was analyzed using Statistical Package for Social Sciences (SPSS version 16). Statistical techniques employed include descriptive statistics.

Results

Table (1): reveals that Structural assessment indicators of Ophthalmology Center were present by 100% in relation to; Location, design, construction, and permit and clearance. Non structural

assessment indicators of Ophthalmology Center were present by 100% including: Building documents , stairs, heating, ventilation, air conditioning, equipment in operating and recovery rooms, laboratory equipment ,other support devices, medical equipment in pharmacy and. However, the non structural assessment indicators of Ophthalmology Center were absent regarding Safety of the roofing, 33.4%. Safety of the ceiling, 33.4%.Safety of doors, and entrances, 57.2% Floor covering, 50% Safety of windows, and shutters 33.4%, Safety of walls, divisions, and partitions 33.4% Electrical system 66.6%, water supply system 75.0%, medical gas system 16.7%. Fire suppression, alarm detection and extinguishing systems 80.0% emergency exit system 100%.Communication system 25.0%. Stuff and staff in emergency room, and wards 57.1% Disasters preparedness plan100%. Furthermore the policy assessment indicators of Ophthalmology Center illustrated absence of either the written or the warning instructions policy are 70.0 %, and procedure policy is 75.0%. Total score of structural, non structural, and policy indicators regarding disasters preparedness at ophthalmology center was49.0 %.

Table (2): illustrates that Ophthalmology Center was (100 %, 90.0%), applied infection control measures related to sterilization department, medical waste storage, pharmacy, and the storage of supplies department. On the other hand Ophthalmology Center was not applied infection control measures related to administration of infection control (Related to infection control team), cleaning center, outpatient clinics, inpatient departments, operation rooms, and isolation department of infectious diseases ,representing the following results; most (88.9%), more than half (57.1%), more than half (57.1%), half (50.0%), half (50.0%), and all (100%)

respectively. The Ophthalmology Center was totally applied infection control measures by 53.2%.

Table (3): shows that the slightly more than half (50.5%) of manpower's aged from 30->40 years with the mean 36.49± 7.2, and more than half (56.2% & 57.2%) of them were female and resident at urban areas respectively, more than two fifths (41.2 %) of manpower had 10->20 years of experience with the mean 11.56±6.1 and most (98.4%) of the manpower attend training program regarding disasters preparedness.

Table (4): stated that fire is the perceived disasters to be expected at Ophthalmology Centre Mansoura University representing that less than half (47.6% & 47.4%) of employee, and securities respectively, more than half (55.4%) of technicians, the majority (85.2%) of head and staff nurses, more than two fifths (42.4%) of housekeepers, and the majority (84.6%) of physicians and pharmacists, while less than one fourth (23.8%) of employee, less than three fourths (73.7%) of securities, half (50.1%) of head and staff nurses and more than three fourths (76.9%) of physicians and pharmacists, reported that violence is the perceived disasters to be expected at Ophthalmology Centre Mansoura University. On the other hand less than one fifth (19.3%) of technicians and the majority (85.2%) of head and staff nurses reported that food poisoning is the perceived disasters to be expected at Ophthalmology Centre Mansoura University. Finally less than two thirds (62.9%) of head, and staff nurses, and less than half (46.2) of physicians, and pharmacists reported that outbreak of infection is the perceived disasters to be expected at Ophthalmology Centre Mansoura University.

Table (5): Poor level of knowledge about definitions of disaster exported the highest percentage for employee,

securities, technicians, head and staff nurses, and housekeepers, representing 51.2%, 78.9%, 97.6%, 69.1%, and 97.0% respectively, while 61.5% of physicians and pharmacists had average level of knowledge about it. Also poor level of knowledge about definitions of disasters preparedness for employee, securities, technicians, head and staff nurses, and housekeepers was 61.9%, 73.7%, 94.0%, 71.6%, and 93.9% respectively, while 46.2% of physicians and pharmacists had average level of knowledge about it. On the other hand average level of knowledge about causes of disasters for employee, and physicians and pharmacists was 38.1%, and 46.2% respectively, while 73.7%, 91.6%, 46.9%, and 93.9% of securities, technicians, head and staff nurses, and housekeepers had poor level of knowledge about it. In relation to types of disasters 41.7%, 52.6%, 80.7%, and 42.0% respectively of employee, securities, technicians, and head and staff nurses had average level of knowledge about it compared to 63.6%, and 69.2% respectively of housekeepers, and physicians and pharmacists had poor level of knowledge about it. Regarding examples of disasters 59.5%, 73.7%, 90.4%, 53.1%, and 78.9% respectively of employee, securities, technicians, and head and staff nurses had poor level of knowledge about it, but 61.5% of physicians and pharmacists had average level of knowledge about it. Finally 57.1%, 78.9%, 92.8%, 48.1%, and 90.9% respectively of employee, securities, technicians, head and staff nurses, and housekeepers had poor level of knowledge about steps of disasters management while 69.2% of physicians and pharmacists had average level of knowledge about it.

Table (6): It was obvious that improper subjective performance occupies the highest percentages for employee, securities, technicians, head and staff

nurses, housekeepers, and physicians, and pharmacists **related to** fire representing 100%, 100%, 98.8%, 100%, 100%, and 84.6% respectively, food poisoning representing 97.6%, 100%, 100%, 97.5%, 100%, and 46.2% respectively, further more all of them (00%) had improper subjective performance related to outbreak of infection. On the other hand proper subjective performance of employee, securities, technicians, head and staff nurses, housekeepers, and physicians, and pharmacists related to violence was 56.0%, 52.6%, 42.2%, 46.9%, 45.5%, and 61.5% respectively, while proper subjective performance related to terrorism was notable specially for employee, securities, and physicians, and, pharmacists representing 59.5%, 57.9%, and 84.6% respectively.

Table (7): stated that there was statistically significant correlation between educational levels of employee, and, housekeepers and, their total score of knowledge about disasters preparedness p <0.026, and =0.013 respectively.

Table (8): stated that there was statistically significant correlation between age groups of employee, and their total score of subjective performance related to disasters preparedness p=0.041, also there was statistically significant correlation between gender of housekeepers and their total score of subjective performance related to disasters preparedness p=0 0.021, in addition there was statistically significant correlation between years of experience of head and staff nurses and their total score of subjective performance related to disasters preparedness p <0.011.

Table (9): stated that there was no statistically significant correlation between levels of manpower's knowledge and their total score of subjective performance related to disasters preparedness.

Table(1): Structural and non structural indicators regarding disasters preparedness at the Ophthalmology Center

Items	Present	Absent
	%	**%**
Structural assessment indicators (13 items)		
Location (5)	100.0	0.0
Design (3)	100.0	0.0
Structure (2)	100.0	0.0
Permit and clearance (3)	100.0	0.0
Non structural assessment indicators (92 items)		
Building documents (2 items)	100.0	0.0
Architectural and furnishings (22 items)		
Safety of the roofing (3)	66.6	33.4
Safety of the ceiling (3)	66.6	33.4
Safety of doors, and entrances (7)	42.8	57.2
Safety of windows, and shutters (3)	66.6	33.4
Safety of walls, divisions, and partitions (3)	66.6	33.4
Safety of floor covering (2)	50.0	50.0
Safety of stairs (1)	100.0	0.0
Safety of lifeline facilities (35 items)		
Electrical system (9)	33.4	66.6
Water supply system (4)	25.0	75.0
Medical gas system (6)	83.3	16.7
Fire suppression, alarm detection and extinguishing systems (10)	20.0	80.0
Emergency exit system (3)	0.0	100.0
Heating, ventilation and air conditioning (3)	100.0	0.0
communication and coordination (4 items)		
Communication system (4)	75.0	25.0
Surge capacity(16 items)		
Equipment in operating and recovery rooms (3)	100.0	0.0
Laboratory equipment and other support devices (3)	100.0	0.0
Stuff, and staff in emergency room, and wards (7)	42.9	57.1
Medical equipment in pharmacy (3)	100.0	0.0
Disasters preparedness plan (13 items)	0.0	100.0
Policy assessment indicators (26 items)		
Written and warning instructions policy (10 items)	30.0	70.0
Procedure policy (16 items)	25.0	75.0
Total score of structural ,non structural, and policy indicators (131 items)	49.0	51.0

Table (2): Infection control measures at Ophthalmology Center

Items	Applied	Not applied
	%	**%**
Administration of infection control (Related to infection control team) (9 items)	11.1	88.9
Cleaning center (7 items)	42.9	57.1
Sterilization department (4 items)	100.0	0.0
Medical waste storage (3 items)	100.0	0.0
Storage of supplies department (10 items)	90.0	10.0
Pharmacy (4 items)	100.0	0.0
Outpatient clinics (7 items)	42.9	57.1
Inpatient departments (16 items)	50.0	50.0
Operation rooms (14 items)	50.0	50.0
Isolation department of infectious diseases (5 items)	0.0	100.0
Total score of infection control measures (79 items)	53.2	46.8

Table (3): Socio demographic characteristics of manpower (n=313)

Items	n=313	%
Age		
20->30	52	16.6
30->40	158	50.5
40 and more	103	32.9
Mean ±SD	36.49± 7.2	
Gender		
Male	137	43.8
Female	176	56.2
Residence		
Rural	134	42.8
Urban	179	57.2
Marital status		
Single	33	10.5
Married	255	81.5
Widowed	19	6.1
Divorced	8	2.5
Educational level		
Primary	24	7.7
Secondary	96	30.7
University	193	61.6
Occupation		
Employee	84	26.8
security	19	6.1
Technician	83	26.5
Head and staff nurse	81	25.9
House keeper	33	10.5
Physician and pharmacist	13	4.2
Years of experience		
1 -> 10	127	40.6
10->20	129	41.2
20-> 30	42	13.4
30 and more	15	4.8
Mean ±SD	11.56±6.1	
Did not attend training program related to disasters	308	98.4

Table (4): Perceived disasters to be expected at Ophthalmology Centre Mansoura University n=313

Items	n=84 Employees n (%)	n=19 Securities n (%)	n=83 Technicians n (%)	n=81 Head and staff nurses n (%)	n=33 Housekeepers n (%)	n=13 Physicians and Pharmacists n (%)
Fire	40 (47.6)	9(47.4)	46(55.4)	69(85.2)	14(42.4)	11(84.6)
Violence	20 (23.8)	14(73.7)	0 (0.0)	41(50.1)	0 (0.0)	10(76.9)
Food poisoning	0 (0.0)	0 (0.0)	16(19.3)	69(85.2)	0 (0.0)	0 (0.0)
Outbreak of infection	0 (0.0)	0 (0.0)	00 (0.0)	51(62.9)	0 (0.0)	6(46.2)
I don't know	44(52.3)	0 (0.0)	21(25.3)	0 (0.0)	29(87.9)	0 (0.0)

Table (5): Levels of Manpower's knowledge about disasters preparedness n=313, continuous....

Items	n =84 Employee n (%)	n =19 Securities n (%)	n=83 Technicians n (%)	n=81 Head and staff nurses n (%)	n=33 House keepers n (%)	n=13 Physicians and Pharmacists n (%)
Definitions of disaster						
Poor	43 (51.2)	15 (78.9)	81 (97.6)	56 (69.1)	32 (97.0)	1 (7.7)
Average	36 (42.8)	3 (15.8)	2 (2.4)	20 (24.7)	1 (3.0)	8 (61.5)
Good	5 (6.0)	1 (5.3)	0 (0.0)	5 (6.2)	0 (0.0)	4 (30.8)
Min Max Range Median	0 3 3 1	0 3 3 1	0 2 2 1	0 3 3 1	0 2 2 0	1 3 2 2
Definitions of disasters preparedness						
Poor	52 (61.9)	14 (73.7)	78 (94.0)	58 (71.6)	31 (93.9)	4 (30.8)
Average	30 (35.7)	5 (26.3)	4 (4.8)	16 (19.8)	2 (6.1)	6 (46.2)
Good	2 (2.4)	0 (0.0)	1 (1.2)	7 (8.6)	0 (0.0)	3 (23.1)
Min Max Range Median	0 3 3 1	0 2 2 1	0 3 3 1	0 3 3 1	0 2 2 0	1 3 2 2
Causes of disasters (3)						
Poor	39 (36.4)	15 (73.7)	67 (91.6)	38 (46.9)	31 (93.9)	2 (15.4)
Average	32 (38.1)	3 (15.8)	14 (6.0)	20 (24.7)	1(3.0)	6 (46.2)
Good	13 (1.5)	1 (5.3)	2 (2.4)	23 (28.4)	1 (3.0)	5 (38.5)
Min Max Range Median	0 3 3 2	0 3 3 1	0 3 3 1	0 3 3 2	0 3 3 0	1 3 2 2
Types of disasters (2)						
Poor	24 (28.6)	6 (31.6)	12 (14.5)	12 (14.8)	21 (63.6)	9 (69.2)
Average	35 (41.7)	10 (52.6)	67 (80.7)	34 (42.0)	11 (33.3)	4 (30.8)
Good	25 (29.8)	3 (15.8)	4 (4.8)	35 (43.2)	1 (3.0)	0 (0.0)

Table (5): Levels of Manpower's knowledge about disasters preparedness n=313

	n=313					
Items	**n=84 Employees** n (%)	**n =19 Securities** n (%)	**n=83 Technicians** n (%)	**n=81 Head and staff nurses** n (%)	**n=33 House keepers** n (%)	**n=13 Physicians and pharmacists** n (%)
Min Max Range Median	0 2 2 1	0 2 2 1	0 2 2 1	0 2 2 1	0 2 2 0	1 2 1 1
Examples of disasters						
Poor	50 (59.5)	14 (73.7)	75 (90.4)	43 (53.1)	29 (78.9)	2 (15.4)
Average	28 (33.3)	5 (26.3)	7 (8.4)	31 (38.3)	4 (12.1)	8 (61.5)
Good	6 (7.1)	0 (0.0)	1 (1.2)	7 (8.6)	0 (0.0)	3 (23.1)
Min Max Range Median	0 4 4 1	0 2 2 1	0 4 4 1	0 4 4 1	0 2 2 0	1 4 3 3
Steps of disasters management						
Poor	48 (57.1)	15 (78.9)	77 (92.8)	39 (48.1)	30 (90.9)	0 (0.0)
Average	31 (36.9)	4 (21.1)	5 (6.0)	32 (39.5)	3 (9.1)	9 (69.2)
Good	5 (6.0)	0 (0.0)	1 (1.2)	10 (12.3)	0 (0.0)	4 (30.8)
Min Max Range Median	0 4 4 1	0 3 3 1	0 4 4 1	0 4 4 2	0 2 2 0	2 4 2 3
Total knowledge score						
Poor	56 (66.7)	16 (84.2)	79 (95.2)	42 (51.9)	32 (97)	2 (15.4)
Average	24 (28.6)	3 (15.8)	4 (4.8)	33 (40.7)	1 (3.0)	6 (46.2)
Good	4 (4.8)	0 (0.0)	0 (0.0)	6 (7.4)	0 (0.0)	5 (38.5)
Min Max Range Median	0 15 15 7.5	1 13 12 6	0 14 14 6	0 18 18 9	0 10 10 3	9 10 10 13

Table (6): Levels of Manpower's subjective performance regarding disasters preparedness n=313

	N=313					
Items	**n=84 Employees** n (%)	**n=19 Securities** n (%)	**n=83 Technicians** n (%)	**n=81 Head and staff nurses** n (%)	**n=33 House keepers** n (%)	**n=13 Physicians and pharmacists** n (%)
Fire						
Proper	0 (0.0)	0 (0.0)	1(1.2)	0 (0.0)	0 (0.0)	2 (15.4)
Improper	84(100)	19 (100)	82 (98.8)	81 (100)	33 (100)	11 (84.6)
Food poisoning						
Proper	2(2.4)	0 (0.0)	0 (0.0)	2)2.5(	0 (0.0)	7 (53.8)
Improper	82(97.6)	19 (100)	83) 100(	79 (97.5)	33 (100)	6 (46.2)
Outbreak of infection						
Proper	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Improper	84(100)	19 (100)	83 (100%)	81(100%)	33 (100%)	13(100%)
Violence						
Proper	47 (56.0)	10 (52.6)	35 (42.2)	38 (46.9)	15 (45.5)	8 (61.5)
Improper	37(44.0)	9 (47.4)	48) 57.8 (	43 (53.1)	18 (54.5)	5 (38.5)
Terrorism						
Proper	50 (59.5)	11 (57.9)	39 (47)	34 (41.9)	10 (30.3)	11 (84.6)
Improper	34 (40.5)	8 (42.1)	44 (53)	47 (58.1)	23 (69.7)	2 (15.4)
Total score						
Proper	0 (0.0)	00 (0.0)	0 (0.0)	1 (1.2)	0 (0.0)	0 (0.0)
Improper	84(100)	19 (100)	83 (100)	80 (98.8)	13 (100)	13(100%)

Table (7): Correlation between socio demographic characteristics of the manpower, and their subjective performance related to disasters preparedness n=313

Demographic variables	Subjective performance related to disasters preparedness n=313											
	Employees n=84		Securities n=19		Technicians n=83		Head and staff nurses n=81		Housekeepers n=33		Physicians and pharmacists n=13	
	Value	P	Value	P	Value	P	Value	P	Value	P	Value	P
Age groups	$X^2=$ 11.580	0.041 (KW)	$X^2=$ 5.954	0.203 (KW)	$X^2=$ 4.226	0.376 (KW)	$X^2=$ 9.523	0.09 (KW)	$X^2=$ 6.244	0.182 (KW)	$X^2=$ 2.13	0.345 (KW)
Gender	Z= .453	0.650	Z= .727	0.567	Z= 1.956	0.05	Z= 0.663	0.508	Z= 2.305	0.021	Z= 0.311	0.836
Educational Levels	$X^2=$ 3.326	0.190 (KW)	$X^2=$ 2.067	0.356 (KW)	$X^2=$ .271	0.873 (KW)	$X^2=$ 1.179	0.554 (KW)	$X^2=$ 0.388	0.533 (KW)	-	-
Years of experience	r= 0.02	0.859	r= 0.33	0.167	r= 0.176	0.112	r=- 0.280	0.011	r= 0.141	0.435	r= 0.06	0.845

Table (8): Correlation between socio demographic characteristics of the manpower, and their knowledge about disasters preparedness n=313

Demographic variables	Knowledge related to disasters preparedness n=313											
	Employees n=84		Securities n=19		Technicians n=83		Head and staff nurses n=81		House Keeper n=33		Physicians and pharmacists n=13	
	Value	P	Value	P	Value	P	Value	P	Value	P	Value	P
Age Groups	$X^2=$ 2.596	0.762 (KW)	$X^2=$ 3.983	0.408 (KW)	$X^2=$ 8.06	0.089 (KW)	$X^2=$ 5.951	0.311 (KW)	$X^2=$ 2,436	0.656 (KW)	$X^2=$ 1.66	0.436 (KW)
Gender	Z= 1.923	0.054	Z= 1.326	0.185	Z= 0.063	0.949	Z= 0.240	0.810	Z= 1.365	0.172	Z= 0.724	0.469
Educational Levels	$X^2=$ 7.299	<0.026 (KW)	$X^2=$ 2.856	<0.240 (KW)	$X^2=$ 4.574	0.102 (KW)	$X^2=$ 1.861	0.394 (KW)	$X^2=$ 6.103	0.013 (KW)	-	
Years of experience	r=- 0.091	0.409	r=- 0.077	0.753	r=0.125	0.258	r=0.061	0.588	r=0.191	0.286	r=.514	.072

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Table (9): Correlation between manpower's knowledge and total subjective performance related to disasters preparedness n=313, continuous....

Items	n=84 Employees	n=19 Securities	n=83 Technicians	n=81 Head and staff nurses	n=33 House keepers	n=13 Physicians and pharmacists
n=313						
Definitions of disaster						
Poor	43 (51.2)	15 (78.9)	81 (97.6)	56 (69.1)	32 (97.0)	1 (7.7)
Average	36 (42.8)	3 (15.8)	2 (2.4)	20 (24.7)	1 (3.0)	8 (61.5)
Good	5 (6.0)	1 (5.3)	0 (0.0)	5 (6.2)	0 (0.0)	4 (30.8)
$\chi^2=$ p	-	-	-	0.452 0.789	-	-
Definitions of disasters preparedness						
Poor	52 (61.9)	14 (73.7)	78 (94.0)	58 (71.6)	31 (93.9)	4 (30.8)
Average	30 (35.7)	5 (26.3)	4 (4.8)	16 (19.8)	2 (6.1)	6 (46.2)
Good	2 (2.4)	0 (0.0)	1 (1.2)	7 (8.6)	0 (0.0)	3 (23.1)
$\chi^2=$ p	-	-	-	0.402 0.818	-	-
Causes of disasters						
Poor	39 (36.4)	15 (73.7)	67 (91.6)	38 (46.9)	31 (93.9)	2 (15.4)
Average	32 (38.1)	3 (15.8)	14 (6.0)	20 (24.7)	1(3.0)	6 (46.2)
Good	13 (1.5)	1 (5.3)	2 (2.4)	23 (28.4)	1 (3.0)	5 (38.5)
$\chi^2=$ p	-	-	-	1.146 0.564	-	-
Types of disasters						
Poor	24 (28.6)	6 (31.6)	12 (14.5)	12 (14.8)	21 (63.6)	9 (69.2)
Average	35 (41.7)	10 (52.6)	67 (80.7)	34 (42.0)	11 (33.3)	4 (30.8)
Good	25 (29.8)	3 (15.8)	4 (4.8)	35 (43.2)	1 (3.0)	0 (0.0)
$\chi^2=$ p	-	-	-	1.40 .497	-	-

Table (9): Correlation between participants' knowledge and total subjective performance related to disasters preparedness n=313

Items	n= 84 Employees	n=19 Securities	n=83 Technicians	n=81 Head and staff nurses	n=33 House keepers	n=13 Physicians and pharmacists
n=313						
Examples of disasters						
Poor	50 (59.5)	14 (73.7)	75 (90.4)	43 (53.1)	29 (78.9)	2 (15.4)
Average	28 (33.3)	5 (26.3)	7 (8.4)	31 (38.3)	4 (12.1)	8 (61.5)
Good	6 (7.1)	0 (0.0)	1 (1.2)	7 (8.6)	0 (0.0)	3 (23.1)
$\chi 2$= p	-	-	-	0.895 0.639	-	-
Steps of disasters management						
Poor	48 (57.1)	15 (78.9)	77 (92.8)	39 (48.1)	30 (90.9)	0 (0.0)
Average	31 (36.9)	4 (21.1)	5 (6.0)	32 (39.5)	3 (9.1)	9 (69.2)
Good	5 (6.0)	0 (0.0)	1 (1.2)	10 (12.3)	0 (0.0)	4 (30.8)
$\chi 2$= p	-	-	-	1.09 0.580	-	-
Total knowledge score						
Poor	56 (66.7)	16 (84.2)	79 (95.2)	42 (51.9)	32 (97)	2 (15.4)
Average	24 (28.6)	3 (15.8)	4 (4.8)	33 (40.7)	1 (3)	6 (46.2)
Good	4 (4.8)	0 (0.0)	0 (0.0)	6 (7.4)	0 (0.0)	5 (38.5)
$\chi 2$= p	-	-	-	0.940 0.625	-	-

Discussion:

Disaster preparedness involves many different community resources from police and fire to medical providers, structural and environmental engineers, and transportation and housing experts. The hospital plays a small but crucial role in this larger picture. It is the epicenter of medical care delivered to those who are injured. Running a hospital is an enormously complex task under the best of circumstances; preparing a hospital for a disaster is infinitely more complicated [24].

World Health Organization [25] recognizes the need for making hospitals safe, especially at a time of disasters and emergencies, when they must be ready to save lives and continue providing essential health services to the community. This will be achieved through continuing process of assessment to disaster preparedness at hospitals.

Discussion of the current study is presented according to assessment of disasters preparedness. The first part concerning with the assessment of the Ophthalmology Center's environment including structural and non structural assessment. The finding of the presented study reveals that structural assessment indicators of Ophthalmology Center were present by hundred percent in relation to: Location, design, construction, and permit and clearance. These results were supported by the [26][27] that developed structural indicators that must be considered in order to ensure that the health facility can withstand and remain operational in emergencies.

[27] **Also supported by Safe Hospitals in Emergencies and Disaster; Structural, Non-Structural and Functional Indicators. World Health Organization, Regional Office for Western Pacific 2011.** That recognizes the need for making hospitals safe, especially at a time of disasters and emergencies, made structural indicators of hospitals and health facilities such as building location, design and structures are important considerations in order for buildings to withstand for disasters events. In addition to (28) they assessed disasters preparedness of hospitals in eight Japanese cities using a questionnaire survey that they found the locations of the hospitals were not in the danger zone.

On the other hand, the results of the present study are incompatible with [29] who evaluate and analysis hospital disaster preparedness in Jeddah Saudi Arabia after Jeddah's floods in 2009 according to hospital disaster preparedness indicators. This study was conducted in Jeddah, from June 18,2010 through June, 2011; random sampling from all hospitals it found hospital structure not prepared for disasters that it refer to lately Saudi Arabia has become atypical region for hazard. Floods and other hazards are observed in Jeddah, a Saudi city on the Red Sea to the west, which have lately affected many people And damaged the infrastructure.

Furthermore the results of present study not agree with [30] they assessed disaster preparedness at hospital in Tehran through descriptive sectional study was performed in the 2013-2014. The 21 public hospitals of Tehran comprised the study populations that were purposively selected. The result of this study showed structural problems at studied hospitals.

In relation to non structural assessment indicators of Ophthalmology Center the findings of the presented study revealed that non structural assessment indicators were present by hundred percent including: Building documents, and stairs, medical gas system, heating, ventilation and air conditioning, equipment in operating and recovery rooms, laboratory equipment and other support devices, and medical equipment in pharmacy. Those results were supported by non-structural indicators belonged to [27] World Health Organization, (2011) Safe Hospitals in Emergencies and Disaster; Structural, Non-Structural and Functional Indicators. World Health Organization, Regional Office for Western Pacific. And PAHO/WHO (2012), [10] and WHO **(PAHO/WHO, 2008)** that developed a Hospital Safety Index considering the nonstructural indicators in assessment of hospital disasters preparedness.

On the opposite side non structural assessment indicators of Ophthalmology Center were absent representing one third safety of the roofing, floor covering, of safety of the ceiling, more than half of safety of doors, and entrances, one third of safety of windows, shutters, walls, divisions, and partitions, two thirds of electrical system, three fourths of water supply system, one fifth of fire suppression, alarm detection and extinguishing systems, all emergency exit system, one fourth of communication system, more than half of stuff, and staff in emergency room, and wards, all disasters preparedness plan, half of written, and warning instructions policy, and more than one third of procedure policy.

These results were not agree with [31] WHO/EURO, (2006), Health Facility Seismic Vulnerability Evaluation: A Handbook, Copenhagen, Denmark, International Strategy for Disaster Reduction and [32] World Health 2009 World Disasters Reduction Campaign, Hospitals Safe from Disasters, Reduce Risk, Protect Health Facilities, Save Lives, and Pan American Health Organization, (2008) Hospital Safety Index: Guide for

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In relation to, disasters preparedness plan; the finding of the present study revealed that there is no disasters preparedness plan at the Ophthalmology Center, these results agree with [33] who assessed awareness of 400 health team members regarding disaster plan of hospital in Ain Shams University Hospital she found that 90 % of health team members reported there is no disasters plan at the hospital.

Also agree with [34] who analyzed the level of preparedness and safety of hospitals with respect to the medical response in a study conducted in twenty-three Iranian's hospitals that found lack of disaster plan in the pre-hospital medical system. While the results of the presented study disagree with [35] they mentioned that the majority of the hospitals (80%) responded that they have evacuation preparedness plan during emergencies.

Concerning the policy related to disasters preparedness, the finding of the present study illustrates the absence of half of written and warning instructions policy and more than one third of procedure policy. These results were agree with [33] they assessed awareness about hospital disaster plan among 400 of health team members in Ain Shams University Hospital she found that the majority of health team members reported that there is no smoking sings on walls, smoking rules related to safety policy, and no special alarms for different disasters, On the opposite side disagree with the standard by [36] for safe hospital from fire.

This part concern with the infection control measures at Ophthalmology Center The findings of the presented study revealed that Ophthalmology Center was hundred percent applied infection control measures related to sterilization department, medical waste storage, storage of supplies, and

pharmacy. These results were agree with [37] who put standard for infection control at **Joint IPCAN/IFIC Conference, and MOHP** [38].

On the opposite side Ophthalmology Center was not applied infection control measures related to administration of infection control (Prelisted to infection control team), cleaning center, outpatient clinics, inpatient departments, and operation rooms. These results were agree with [39] who assessed infection control committee at Benha University Hospital, the study applied on 176 physicians and 115nurses, which found that the majority of physicians and nurses not trained on infection control measures, but disagree with [37] who put operational standard to infection control.

The assessment of the disasters preparedness at Ophthalmology Center illustrates that it is unprepared regarding structural and non structural indicators but prepared in relation to infection control measures.[40] stated that hospital preparedness may be defined as the ability to effectively maintain hospital operations, sustain a medically safe environment, and adequately address the increased and potentially unusual medical needs of the affected population importantly; however, little evidence exists to indicate that the majority of hospitals have reached this goal for their probable hazardous incidents and disasters.

The results of the present study were posited to [41] as they carry out secondary data analysis was conducted using the National Study of Rural Hospitals (2006-2007) from Johns Hopkins University. The study, based on a regionally stratified, random sample of rural hospitals, consisted of a mailed questionnaire and a follow-up telephone interview with each hospital's Chief Executive Officer (n = 134). A model of disaster preparedness was utilized to

examine seven elements of preparedness. The results indicated that rural hospitals were moderately prepared, overall, (78% prepared on average), with higher preparedness in isolation/decontamination (91%); moderate preparedness in administration/ planning (80%), communication/ notification (83%), staffing/support (66%, and supplies/pharmaceuticals/laboratory support (70%); and lower preparedness in surge capacity (64%). Otherwise the concepts of disaster preparedness are not novel but still occupy lowest concern from the responsible and their reluctant on action based on raised situation.

Concerning the socio-demographic characteristic of the studied sample. The finding of the present study shows that the slightly more than half of manpower's aged from 30->40 years with the mean 36.49± 7.2, and more than half of them were female and resident at urban areas respectively, more than two fifths of manpower had 10->20 years of experience with the mean 11.56±6.1 and more than half of them had completed university degree, less than one third of manpower had secondary school and none of them attend training program regarding disasters preparedness.

These results were to some extent agree with who conducted a cross-sectional study at 2013 on 200 healthcare workers at Shahid Mohammadi Hospital, in the City of Bandar Abbas, Iran to assess hospital workers disaster management and hospital non structural that include 65.5% females, and 34.5% males, the educational status of hospital personnel interviewed were 13% associate diploma, 65% bachelor, 17% of participants had trained in disaster management, and 83.0% of participants did not receive any training program.

Regarding the occupation, the current study distributed manpower from different occupation employee, security,

technician, head and staff nurse, house keeper, physician and pharmacist. These results were supported by [33] who also included in her study all occupation categories at hospital.

In relation to attend training program related to disasters, it is obvious that almost none of the manpower training program related to it, this was contradicting with [40] which conduct a cross-sectional online survey on 572 physicians, subspecialty fellows, residents, nurses, physician assistants, and their respective students; when asked about level of formal disaster management training: 27.5% noted that no training was provided and 33% noted that they received 12 hours of training and only a quarter had more than 48 hours of formal training. 86.6% of respondents noted an interest in participating in a disaster management training workshop.

This part concerning with manpower's knowledge regarding to disasters preparedness related to these items: Definition of disasters, and disasters preparedness, causes, types, and examples of disasters, process of disasters management. The finding of the present study revealed that poor total knowledge score about the previously pensioned items represented two thirds, the majority, most, slightly more than half, and most among employee, security, technician, head and staff nurse, house keeper, physician and pharmacist respectively, while less than half of physician and pharmacist had average total knowledge score.

This finding is matched with [37] who carried out descriptive study to assess nurses' knowledge about preparedness for disasters at Cairo University Hospital and found that the majority of nurses don't have knowledge associated with the hospital disasters preparedness. These results of the presented study disagree with [42] **Abu Hussein, (2012)** who conducted this study at Banha University hospital to

assess nurses' awareness and their hospital preparedness for disasters and found that more than half of participants aware about disasters preparedness. From the researcher point of view almost none of manpower attend training program related to disasters, as previously mentioned and any shown knowledge resulted from one's own perseverance to acquire knowledge.

This part concern manpower's subjective performance regarding disasters preparedness the result showed that improper subjective performance occupies the highest percentages for employee, securities, technicians, head and staff nurses, housekeepers, and physicians, and pharmacists related to fire, food poisoning, outbreak of infection, violence, and terrorism. Almost all manpower had improper total score of subjective performance.

These results disagree with [42] **Lakbala, (2015)** who conducted cross-sectional study in twenty-three Iranian's hospitals. To assess hospital workers disaster management and hospital nonstructural which showed that the non-university hospitals that included in this study had a higher performance rate in disasters.

Consequently the findings of the presented study revealed that there was no statistically significant correlation between manpower's knowledge and their subjective performance related to disasters preparedness. These results may inferred to lack of knowledge about disasters preparedness and absence of training on haw to perform in different disasters.

This part concern with perceived disasters to be expected at Ophthalmology Centre the result showed that fire, violence, food poisoning, and outbreak of infection are the perceived disasters to be expected at Ophthalmology Centre. [43] **National Disaster Management Authority, (December, 2013)** stated that hospitals may face both internal and external disasters. The impact of internal disasters such as a fire, hazardous material exposure, utility failures, etc., is typically limited to the hospital/healthcare facility while external disasters include scenarios such as earthquakes, mass casualty events or epidemics where the hospital itself may or may not be affected but is a critical part of the larger response.

Regarding to, correlation between socio demographic characteristics of the manpower, and their knowledge about disasters preparedness. The findings of the presented study revealed that there was no statistically significant correlation between socio demographic characteristics of head and staff nurse, and their knowledge related to disasters preparedness. These findings are in the same line with [5] **gaber , (2013)** who used descriptive study to assess nurses' knowledge about preparedness for disasters at Cairo University Hospital; he found that there was no statistically significance between job title, years of experience, age and their knowledge.

Conclusion:

The results of the present study concluded on the high lighting of disasters preparedness; Ophthalmology Center was totally unprepared regarding disasters preparedness indicators; also totally unprepared in relation to applied infection control measures. The order of most commonly perceived disasters to be expected by manpower at Ophthalmology Centre were fire, violence, food poisoning, and outbreak of infection Concerning with the manpower's knowledge regarding disasters preparedness, it was obviously that poor level of total knowledge score topping scene for all manpower category except for physicians and pharmacists. As well all categories of manpower had total score of improper subjective performance

related to fire, food poisoning, outbreak of infection, violence, and terrorism,; except for head and staff nurses. Finally concerning with correlations, there was statistically significant correlation between educational levels of employee, and housekeepers and, their knowledge about disasters preparedness, there was statistically significant correlation between age groups of employee, and their subjective performance, also there was statistically significant correlation between gender of housekeepers and their subjective performance, in addition to there was statistically significant correlation between years of experience of head and staff nurses and their subjective performance. There was no statistically significant correlation between manpower's knowledge and their subjective performance related to disasters preparedness.

Recommendations:

On the light of the current study, the following recommendations are suggested:

Firstly specified to Ophthalmology Center Mansoura University

1. Continuous assessment of disasters preparedness.
2. Training programs for manpower's regarding disasters preparedness.
3. The absent out lined of non structural indicators including: building documents, architectural and furnishings, safety of lifeline facilities, communication and coordination, surge capacity, disasters preparedness plan, and policy shout be addressed by concern.
4. Establish isolation department for infectious diseases.

Secondly for hospitals at a large

Establish a net working system between all hospitals for disasters preparedness.

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